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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,768	03/31/2004	Peng Chang	SAR 14951	5254

28166 7590 09/19/2005

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EXAMINER
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EDWARDS, PATRICK L

ART UNIT	PAPER NUMBER
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2621

DATE MAILED: 09/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/813,768

Applicant(s)

CHANG ET AL.

Examiner

Patrick L. Edwards

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-16 and 22-25 is/are allowed.
- 6) ☐ Claim(s) 1-4, 6-9, 17, 26-27, 29 is/are rejected.
- 7) ☐ Claim(s) 5, 10, 18-20 and 28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

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### **DETAILED ACTION**

1. The response received on 18 May 2005 has been placed in the file and was considered by the examiner. An action on the merits follows.

#### ***Response to Arguments***

2. The arguments filed on 18 May 2005 have been fully considered. A response to these arguments is provided below.

#### **35 USC 112, Second Paragraph Rejections**

##### **Summary of Argument:**

Claims 4, 11, 14, 23, 26, and 28 have been amended to address the rejections

##### **Examiner's Response:**

The previous rejections are hereby withdrawn

#### **Prior Art Rejections**

##### **Summary of Argument:**

1. Applicant alleges that Brumitt does not teach two ground planes, but only teaches a single ground plane. Applicant further states that Brumitt does not teach the limitation of "compensating the depth map for differences between the assumed ground plane and the actual ground plane" because Brumitt only teaches a single ground plane (see remarks pg. 9).

##### **Examiner's Response:**

1. Applicant's arguments have been fully considered, but are not persuasive. Applicant is reminded that claims are given their broadest reasonable interpretation as instructed by MPEP 2106. With this in mind, the "assumed ground plane" required by the claim is disclosed by Brumitt. Brumitt discloses identifying minimum and maximum depths, and using these depths to via conventional methods to define ground plane boundaries of the scene. These maximum and minimum depths qualify as assumed ground planes because they loosely define ground plane boundaries, which are then projected to become the actual ground plane.

#### ***Allowable Subject Matter***

3. Claims 11-16 and 22-25 are allowed.

4. Claims 5, 10, 18-20, and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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*Claim Rejections - 35 USC § 102*

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 2, 6, 26, and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Brumitt (US 6,658,136).

Brumitt teaches the limitation of claim 1, a method of performing vision processing comprising: producing a depth map of a scene proximate a platform, wherein the depth map is based on an assumed ground plane (Column 7, Line 66 through Column 8, Line 5, wherein the range images are the depth map images and are generated based on a scene which includes an assumed ground plane as will be further discussed in relation to actual ground identifying teaching); identifying an actual plane using the depth map (Column 11, Line 59, through Column 12, Line 4, wherein based on the original depth image of the scene, the pixel values of the boundaries of the scene which are considered to be part of the assumed ground plane are considered for defining the actual ground plane); and compensating the depth map for differences between the assumed ground plane and the actual ground plane (Column 12, Lines 10-17, wherein the pixels location on the map are rotation for roll and the pitch of the camera as part of the compensation for differences between the originally assumed ground plane and the newly generated actual ground plane);

Brumitt teaches limitation of claim 2, method further including the step of comparing the depth map to a plurality of templates to identifying a match between the depth map and at least one template (Column 11, Lines 15-21, wherein the previously characterized objects or persons are the templates which the system performs the matching of the depth image objects with);

Brumitt teaches limitation of claim 6, accessing at least from a database comprising a plurality of templates (Column 11, Lines 15-21, wherein having a database for for retrieving comparable data);

Brumitt teaches the computer readable medium of claim 21 storing a vision system program corresponding to method of claim 1 above (Column 5, Lines 10-12);

Brumitt teaches limitation of claim 26 corresponding to the method of claim 1 above utilizing stereo images (Column 8, Lines 1-5);

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Brumitt teaches limitation of claim 27, the technique of correction is a vertical translation of the original stereo images (Column 12, Lines 10-17, where x, y, z positions are corrected for by translation in y or vertical direction);

Brumitt teaches limitation of computer readable medium of claim 30 storing a vision system program that controls a computer to perform the steps of the corresponding method claim 26 (Column 5, Lines 10-12).

### *Claim Rejections - 35 USC § 103*

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2-4, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brumitt in view of Gokturk et al. (US 200301699060).

Brumitt teaches number of limitation of the claims including comparing of objects to a pre-characterized objects being templates for identification of newly generated objects however, Brumitt fails to specifically teach having a particular database with plurality of templates stored therein related to detected objects. Gokturk teaches, limitation of claim 2, further step of comparing the depth map to a plurality of templates to identifying a match between the depth map and at least one template (Paragraph 131, Lines 1-5, wherein depth maps images of a face (Paragraph 130) is being matched to the templates in a database);

Gokturk teaches limitation of claim 3, method further including a step of adjusting a parameter of the platform in response to a match (Paragraph 152, Lines 5-7, where the operation of the airbag onboard is adjusted based on the occupant);

Gokturk teaches limitation of claim 4, wherein the parameter is selected from an airbag (Paragraph 152, Lines 5-7);

Gokturk teaches limitation of claim 6, accessing at least one template from a database comprising a plurality of templates (Paragraph 132, 1-3, wherein a database of templates or faces is provided for accessing;

Gokturk teaches limitation of claim 7, the plurality of templates represent objects at varying positions and poses relative to the platform (Paragraph 105, Lines 1-8, wherein translational and pose data is incorporated into modeling process).

It would have been obvious to an ordinary skilled person in the art to utilize Brumitts characterization process of the regions based on the depth image of the scene and storing them for later use (Column 11,

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Lines 11-21) with Gorkturks system because, the characterization of the scene of an interior of a vehicle and identifying the person entering the vehicle by matching technique to the previously stored scene images requires *less processing* than recognition and classification of Gorkturks and this utility is further helpful in determining airbag deployment process based on the previously stored object poses (Paragraph 54).

9. Claims 8, 9, 17 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brumitt in view of Trajkovic et al. (US 20030112132).

Regarding claims 8 and 9, Brumitt teaches number of limitations of the claims however, Brumitt fail to specifically teach at least one template in the plurality of templates is a model of a vehicle and/or pedestrian or the collision avoidance system of the claims. Trajkovic teaches templates generated for detecting of pedestrians and vehicles (Paragraph 30, Lines 6-16). It would have been obvious to an ordinary skilled person in the art to utilize identifying of objects based on segmented regions in reference to a ground plane of a scene of Brumitts system with Trajkovic et al. in order to match vehicles or pedestrians to specific regions and not the whole scene.

Brumitt teaches limitation of claims 17 and 29 substantially, a collision avoidance system comprising: a collision detection system comprising (there are no weights given to either collision avoidance or detection because they are not referred or recited in the body of the claim and therefore are only considered as an intended use); a stereo image preprocessor for preprocessing said imagery (Column 8, Lines 1-5, process action 300 is the preprocessor); a map generator for producing from said preprocessed imagery a map referenced to an assumed ground plane (Column 8, Lines 1-8, wherein range images being the depth map images are generated with the ground area being part of the scene in the images); and a target processor for determining the actual ground plane from said map (Column 11, Line 59 through Column 12, Line 4, where a actual ground plane is defined based on the assumed ground boundary pixel analysis of step 312 of figure 3 for further target or object processing step 316);

However Brumitt does not specifically teach a platform; a stereo camera pair for producing imagery of a scene of the claims. Trajkovic teaches stereo cameras for producing a stereo image (Paragraph 36, Lines 1-16). It would have been obvious to an ordinary skilled person in the art to utilize pair of cameras of Trajkovics system in order to account for curvatures and non-linearities of the optics of a camera (Paragraph 34, Lines 12-17).

### *Conclusion*

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date

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of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick L Edwards whose telephone number is (571) 272-7390. The examiner can normally be reached on 8:30am - 5:00pm M-F.

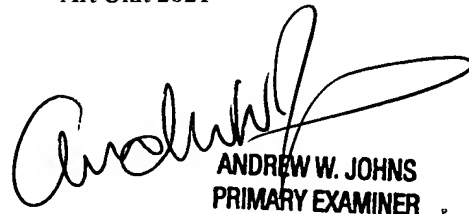
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joe Mancuso can be reached on (571) 272-7695. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick L Edwards

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ANDREW W. JOHNS  
PRIMARY EXAMINER